

Claims:

- Sub 5
1. A data object for visually displaying physiological information concerning the human heart in real time, comprising:
an object representing a heart wherein the heart is divided into four chambers and arrows are used to display blood flow information between the individual heart chambers.
 2. The data object of claim 1 wherein at least one of the individual heart chambers expands and contracts to display the filling state of the heart chambers.
 3. The data object of claim 2 wherein each of the individual heart chambers expands and contracts in real time to show the filling state of the individual heart chamber.
 4. The data object of claim 1 wherein visual information is displayed to show the compliance state of the right and left ventricle .
 5. The data object of claim 4 wherein the compliance of the right and left ventricle is illustrated can be illustrated as mildly, moderately or severely noncompliant based by the presence of shaded rectangular boxes located within the right or left ventricle.
 6. A data object for visually representing the resistance to blood flow in a patient and the oxygenation state of a patient's blood wherein the object is visually representative of the patient's mean arterial pressure (MAP), the patient's central venous pressure (CVP) and the cardiac output (CO) of the patient in real time.
 7. The data object of claim 6 wherein the data object reflects the oxygenation of the arterial and venous blood in real time.

8. The data object of claim 6 wherein the data object updates the vascular resistance and cardiac output of the patient in real time of the blood after it has left the RV of the heart and after it has left the LV of the heart.

5 9. A data object useful for displaying and updating in real-time the oxygenation of the blood of a patient during a cardiopulmonary bypass procedure, comprising:

a venous reservoir object for visually displaying in real time the amount of stored venous blood;

10 a pump object for visually displaying in real time the amount of blood diverted to the patient; and

an oxygenator object for displaying in real time visual information concerning at least one parameter selected from the group consisting of carbon dioxide concentration (PaCO_2), gas flow (oxygen) into the bloodstream, inspired oxygen in the blood stream (FiO_2) and mixed arterial oxygen tension (PaO_2).

15 10. The data object of claim 9 wherein blood flow to the patient is visually indicated by horizontally oriented arrows extending to the oxygenator object wherein each arrow represents one liter of blood.

20 11. The data object of claim 9 wherein blood flow to the patient is visually indicated by a horizontally oriented line intersecting a vertically oriented meter wherein the horizontally oriented line moves in real time and intersects the vertically oriented meter to visually indicate the amount of blood flow to the patient.

25 12. The data object of claim 9 wherein the oxygenator object displays information concerning of carbon dioxide concentration (PaCO_2), gas flow (oxygen) into the bloodstream, inspired oxygen in the blood stream (FiO_2) and mixed arterial oxygen tension (PaO_2).

30 13. The data object of claim 12 wherein markers move up and down vertically oriented scales to show the actual carbon dioxide concentration (PaCO_2), gas flow,

inspired oxygen (FiO_2) and mixed arterial oxygen tension (PaO_2) in the blood stream in real time.

14. The data object of claim 13 where visual and auditory alarms are used to indicate whether critical levels of carbon dioxide concentration (PaCO_2), gas flow, inspired oxygen (FiO_2) and mixed arterial oxygen tension (PaO_2) in the blood stream in real time are occurring.

15. A data object for visually displaying information of either a volume or pressure ventilator in real time comprising: an object display wherein the object display is divided into a one object for visually displaying information in real time concerning a volume ventilator and one object for visually displaying in real time concerning a pressure ventilator.

16. The data object of claim 15 wherein the object visually displays an oscillating bellows or horizontally displaced arrows for displaying information in real time as to air flow to the patient.

17. The data object of claim 15 wherein horizontally oriented scales are utilized for displaying in real time information concerning respiration rate, breath cycle time, inspiration time and expiration time.

18. The data object of claim 15 where information concerning PIP, MAP and PEEP are visually indicated by markers moving up and down a vertically oriented scale for displaying such information in real time.

19. A data object for visually displaying information concerning volume ventilation, pressure ventilation and air intake of a patient in real time comprising:

one object representing a volume ventilator;

one object representing a pressure ventilator; and,

one object representing a patient wherein the object for representing the patient displays in real time physiological information concerning lung compliance, CO₂ elimination and total air volume inhaled ("TVI").

- 5 20. The data object of claim 19 wherein physiological information is also displayed concerning obstruction of airflow to the patient.

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